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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,591	03/10/2004	Toshimitsu Hirai	9319S-000727	4716
27572 7590 07/01/2008 HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303				
EXAMINER				
LIN, JAMES				
ART UNIT		PAPER NUMBER		
1792				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/797,591

Applicant(s)

HIRAI ET AL.

Examiner

Jimmy Lin

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10 and 14-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

Detailed Action

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6 and 14-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Akahira et al. (U.S. Patent No. 6,145,981).

Claims 1-2,14: Akahira teaches a method for forming a film pattern by arranging droplets of a liquid material on a substrate [fig 16B], the method comprising: a first step of discharging a first plurality of the droplets in an elongated central part of the film pattern on the substrate [fig 15, 53] ; a second step of discharging a second plurality of the droplets along a first side of the formed central part [fig 16B, 1] the second plurality of the droplets partially overlapping the formed central part (2 with respect to 1); and a third step of discharging a third plurality of the droplets (3) along a second side of the formed central part (3 with respect to 2), the third plurality of the droplets partially overlapping the formed central part (3 with respect to 1) on figure 16B.

Claims 3,15: Akahira teaches the first step comprises: discharging a first set of linearly spaced apart first droplets on the substrate (fig 16B, 1); and thereafter discharging a second set of linearly spaced apart second droplets (FIG 16B, 20 on the substrate (53), the second droplets filling in gaps between the first droplets(2 is placed between ones).

Claims 4-6: The arrangement intervals can have different values. For example, the first and second droplets of the droplet 1 have a different interval than the first and third droplets of the droplet 2 (Fig. 16B). Additionally, the volumes of the droplets can have different values due to the instability of the first few discharges (Fig. 16B).

Claim 16: Akahira teaches the second step comprises: discharging a third set of linearly spaced apart third droplets along the first side of the formed central part; and thereafter

discharging a fourth set of linearly spaced apart fourth droplets along the first side of the formed central part, the fourth droplets filling in gaps between the third droplets [fig 16B].

Claim 17: Akahira teaches pattern forming method of claim 16 and the third droplets partially overlap the first droplets; and the fourth droplets partially overlap the second droplets [fig 16B].

Claim 18: Akahira teaches the pattern forming method of claim 16 and the third step further comprises: discharging a fifth set of linearly spaced apart fifth droplets along the second side of the formed central part; and thereafter discharging a sixth set of linearly spaced apart sixth droplets along the second side of the formed central part, the sixth droplets filling in gaps between the fifth droplets [fig 16B].

Claim 19: Akahira teaches pattern forming method of claim 18, the fifth droplets partially overlap the first droplets; and the sixth droplets partially overlap the second droplets [Fig 16B].

Claim 20: Akahira teaches the pattern forming method of claim 19 further the third droplets partially overlap the first droplets; and the fourth droplets partially overlap the second droplets [fig 16B].

3. Claims 1, 2, 4, 8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Pan (U.S. Patent No. 6,501,663).

Pan teaches a pattern forming method for forming a film pattern such as seen on figure 15 by arranging droplets of a liquid material (electrically conductive droplets, droplets (110) on a substrate (electronic devices 121 and 103,)), the method comprising: a first step of forming a central part of the film pattern (155) on the substrate using the droplets; a second step of forming one side (153) with respect to the formed central part; and a third step of forming the other side (157) with respect to the formed central part, [col 10, lines 15-20].

Claim 2: Pan teaches the droplets are arranged on the substrate so that the droplets overlap with at least a part of the central part formed on the substrate [fig 15] to form the sides.

Claim 4: Pan teaches that the arrangement conditions of the droplets in the first, second, and third steps are set differently, since the droplets are set at different positions, therefore different arrangement must have been require in order to eject the droplet at different position

Claim 8: Pan teaches that the droplets are electrically conductive in order to form an interconnect.

Claim 10: Pan teaches a method of manufacturing a device having a wiring pattern (interconnect system) comprising a material arrangement step of arranging droplets of a liquid material on a substrate, wherein the material arrangement step comprises: a first step of forming a central part (fig 15, 153) of the wiring pattern on the substrate using the droplets; a second step of forming one side with respect to the formed central part (fig 15, 155); and a third step of forming the other side with respect to the formed central part (fig 15, 157).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akahira '981 as applied to claim 1 above, in view of Ohtsu et al. (U.S. Patent No. 6,720,119).

Akahira teaches a method of ink-jetting color filters (col. 13, lines 5-62), but does not explicitly teach a surface treatment step of adjusting a lyophobic property of the surface of the substrate before arranging the droplets on the substrate. However, Ohtsu teaches that it was well known in the art of ink-jet printing color filters to have carried out hydrophilicity and hydrophobicity processing prior to forming the color filters. Because Ohtsu teaches that such a method was operable in the art, it would have been obvious to one of ordinary skill in the art at the time of invention to have performed a surface treatment step of adjusting a lyophobic property of the surface of the substrate of Akahira prior to arranging the droplets with a reasonable expectation of success.

Response to Arguments

6. Applicant's arguments filed 3/31/2008 have been fully considered but they are not persuasive.

Applicant argues on pg. 9 that the middle pattern 155 of Pan is not formed first. However, the claims do not require any specific order of forming the first, second, and third steps. For example, the claim is open to performing the second step prior to performing the first step.

Applicant argues on pg. 9-10 that Akahira fails to disclose or suggest the claimed limitations. However, droplet 1 is the central part while droplet 2 and droplet 3 are the parts around the central part. The overall formation of all the droplets 1 creates an elongated pattern. The droplets are discharged in an overlapping state (col. 13, lines 50-52).

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is (571)272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jimmy Lin/
Examiner, Art Unit 1792

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit
1792